Division of Simplified Practice

by

Edwin W. Ely, *Chief*
Division of Simplified Practice
National Bureau of Standards

Producers, distributors, and consumers in many industries co-operate to gain economies through simplified practice

One of the oldest and perhaps the best known of the commercial standardization services of the National Bureau of Standards is the Division of Simplified Practice. In this article, Edwin W. Ely, chief of the Division, tells of its work and accomplishments. This is the second in a series of articles on the five divisions and sections of the Bureau, activities of which will be gradually taken over by the ASA during a transition period.

—

"Variety is the spice of life!" How often have we all used that phrase, and meant it? It connotes zestful living and exemplifies the spirit of adventure. So long as variety concerns our sports, our mode of thinking, or our way of expressing personality, all is well. We feel like kids on a holiday.

However, variety can be a very expensive commodity when it invades the backstage of our existence, and affects such unromantic articles as the minor parts of the automobile we bully around when we are eager to set off on an errand of entertainment; the replacement of a broken fountain-pen cap; the repair of a burned-out electric toaster; the fitting of a new mattress to a bed; or the procurement of a fresh supply of business forms, such as checks, and invoice forms.

How simple life seems when we can get our auto quickly and inexpensively repaired; how relieved we are when we find a fountain-pen cap of just the right fit waiting patiently for us in some shop; how gleefully we slip a new element into the toaster and say, "there, I didn't have to buy a whole new toaster at all;" what a grand and glorious feeling it is to know that we have found a mattress of just the right size, without having had to contract for the construction of a special one; and how convenient it is to be able to secure business forms that are uniform in size.

We take it all as a matter of course, pay less than formerly, and never complain about any infringement upon our aesthetic life. We find that autos, held together by 2,100 different varieties of bolts and nuts, get us to our sports, our matinees and summer resorts, and our business engagements, and hold measurable advantages over the vehicle that contained 13,000 varieties.

A 1/32 inch is but a fly speck, and yet when it is detached from, or appended to, the dimensions of some common article of everyday life, someone has to stand by and hear the appropriate tune played on somebody's cash register—someone has to pay for the extra motions through which the manufacturer had to go when he produced that article—the changing of the molds, a change in the setting of the machine, the cost of keeping track of the finished article. Someone has to pay for the burden of charge thus passed on to the dealer who must stock, inventory, and dispose of that article. Had that 1/32 inch never been mentioned, the burden of charge would never have come into existence.

That army of consumers, the housewives (who do approximately 86 per cent of the annual retail buying in this country), know for example that formerly beds, springs, and mattresses were made in 78 different sizes; that there were 49 different sizes of milk bottles, 78 different sizes of bed blankets, 74 sizes of Turkish towels, and a countless number of sizes of cans for fruits and vegetables; and that since the needless variety has been reduced, there has resulted a saving of time, space, and also of materials.

The producers and distributors concur in this view. In fact, in carrying through any program of simplification the co-operation of all elements is necessary, especially at this time when there is known to exist a lack of balance between the vari-

ous forces that enter into our industrial, economic, and social life.

One economic force in industry operates toward reduction in variety of product, toward concentration on variety in greatest demand. It is a force that arises out of the knowledge that, other things being equal, it costs less to make things alike than to make them different. Every manufacturer knows that it costs less to make 100,000 articles all alike than to make 1,000 each of 100 different kinds. It costs less to account for them, to handle them, and to store them. The weight or strength of this force can usually be measured in dollars and cents.

Of the two forces tending toward diversity—toward increase in variety—one may be identified as the influence of sales departments upon production policies. The other force may be called the "creative complex," meaning the desire for individuality on the part of designers. The designer of commodities wants to impress his individuality upon the product, to design something new, something different, something presumably better. This desire which carries the vital principle of growth must not be ignored or suppressed. Yet a sharp distinction must be drawn between improvement and more diversity. Someone other than the designer must usually decide when improvement stops and diversity begins.

The consumer could aid materially in rendering that decision were he to find a way that would excel in speed the present slow process of expressing his wishes to the manufacturer. Usually the consumer's statement of preference travels slowly, over a devious route. However, it is not sufficient for one or two manufacturers to know a little about a fraction of the market place. The entire market place with its host of distributors and legions of consumers should be sufficiently articulate to reach the attention of those who make the desired articles. The setting up of a clearing house would provide a meeting place for the exchange of ideas. Through such a medium the manufacturers could quickly feel the pulse of popular demand, and intelligently mold their production policies.

Division offers clearing house

To an increasing degree industries realize that today such a clearing house does exist, in the form of the Division of Simplified Practice. This Division was established in 1921, under the Bureau of Standards of the Department of Commerce, to cooperate with manufacturers, distributors, and users of commodities for the purpose of eliminating waste through reduction of unnecessary variety of methods and products.

If all groups, whether they be of manufacturers, distributors, or consumers, will utilize the procedure developed by the Division of Simplified Practice, and will co-operate with each other in integrating the data that have been brought out by various studies and surveys, and will collaborate in the intelligent use of available facts and services, it will be possible to more nearly approach the desired balance of the forces of production, distribution, and consumption. Any plan that has this for its objective must be worked out by all interests acting in concert, and it must be national in application.

More than 11,000 different organizations and individual firms are now listed as acceptors of the present list of 150 simplified practice recommendations, covering a wide range of commodities. The total number of recorded acceptances exceed 20,000.

The continued success of these 150 simplified practice recommendations depends upon maintaining interest and on keeping them abreast of current conditions. The latter requires, usually once a year, (*a*) periodic resurvey to measure the degree of adherence and to determine the desirability of revision, and (*b*) the holding of conferences of standing committees, or of the industries, when necessary, to consider such revisions or to reaffirm the recommendations.

The initial action on the part of an industry in adopting a simplified list of sizes and varieties of a given commodity is based on current conditions. The demand for particular types or sizes of a product may be directed toward entirely different items as time passes. Industry has found in the simplified practice procedure a method whereby it can effect the changes necessary to keep the recommendations abreast of current practice. A number of simplified practice recommendations are undergoing this process of revision right now.

The paving-brick industry was the first to use the services of the Division of Simplified Practice. The procedure followed in developing simplified practice in that industry will serve as a typical illustration of the methods and principles already described in this article, and in the article that appeared in the August, 1933 issue of this magazine, written by Dr. Lyman J. Briggs, Director of the Bureau of Standards.

In the case of paving bricks, as in most others, the project was initiated by the manufacturers of the product, through their national association. In spite of the fact that the volume of business had not fallen off to any great extent, representative manufacturers believed that excessive variety was keeping costs at unduly high levels. Each manufacturer submitted figures showing the number of

bricks of each size and type produced during a period of several years, also the current average demand for each. These figures were tabulated in the order of percentage of sales of each size to total sales. The tabulation disclosed that more than 80 per cent of total sales were concentrated on less than 20 per cent of existing varieties or sizes. Of the 66 sizes of vitrified paving brick regularly produced, 11 accounted for more than 80 per cent of total sales. The remaining sales were thinly and unprofitably distributed over the other 55 sizes. The manufacturers therefore proposed to classify these 11 sizes as "recognized varieties" and to eliminate as far as possible all other sizes.

A general conference was held at the Department of Commerce on November 15, 1921, and was attended by manufacturers, distributors, federal, state, and local highway officials representing users, and highway engineers. The proposals of the manufacturers, backed by the conclusive evidence shown in the tabulation, was presented, and the conference voted unanimously to approve them as a Simplified Practice Recommendation. A standing committee of the industry was then appointed to sponsor the recommendation. The members of this committee included representatives of manufacturers, dealers, engineers, and other groups concerned.

A detailed report of the conference was prepared by the Division of Simplified Practice and mailed to interested organizations, companies, and individuals. Included with the report was an "Acceptance Blank" by which formal approval could be registered. This blank stated in effect that the signer approved the action taken by the general conference, and accepted the recommended sizes as his standard of practice for production, distribution, or use, as the case might be. When a sufficient number of signed acceptances had been received to indicate initial success of the program, the "simplified list" of sizes, together with a brief history of the project, was published in booklet form by the Department of Commerce, Bureau of Standards, and designated as "Simplified Practice Recommendation R1."

The standing committee met on March 27, 1922, and annually thereafter, to consider data showing shipments of each size and type of brick, through which the degree of adherence to the recommendation could be measured. At the first revision conference, the simplified list was reduced to 7 sizes. Subsequent conferences resulted in a net reduction to 6 sizes, which cover more than 75 per cent of total demand.

Since the paving brick recommendation was developed, the Division of Simplified Practice has cooperated in developing more than 150 additional completed recommendations. In each case the procedure followed was basically the same as that which has been described. The recommendations cover a wide range of commodities, including construction materials, many metal products, tools, ceramic products, textiles, paper and cardboard products, mechanical products, materials-handling equipment, various types of containers, and forms such as invoices and warehouse receipts. A complete list of the active Simplified Practice Recommendations is shown on the following pages.

Recommendations in trade literature

An essential corollary to the application of a simplified practice recommendation is the adoption of adequate means of keeping the project constantly before the consumer through identification of the simplified list of items in handbooks, catalogs, advertising, etc. The Division of Simplified Practice has been able to assist manufacturers and distributors in carrying out the expressed wishes of the consumer in this regard. During the year 1933 there has occurred a notable increase in the number of such specific references in trade literature. In several industries all the accepting manufacturers are following the practice of identifying the simplified lists of sizes and types of their products.

Obviously, the value of any simplification project is measured by the degree or extent of its actual application or use. Moreover, standards, however meritorious, do not "sell" themselves; their usefulness must be demonstrated.

The most rapid and widespread adoption of a recommendation is not obtained by waiting for its superiority over former practice to become evident through "trial-and-error". Instead it is essential in the interest of minimizing waste that the advantages inherent in the program be thoroughly and persistently emphasized and demonstrated. The procedure of the Division of Simplified Practice emphasizes the fact that only in this way can the program's value be brought home effectively. Predictions not based on practical demonstration usually fail to convince the prospective user of the benefits he can expect.

The results and benefits of simplified practice to manufacturers and distributors are felt finally by the consumer. The ultimate consumer of "end products" pays all the bills in the long run, hence is directly concerned in any program which results in saving money in the manufacture or distribution of the products he buys at retail. His interest in simplified practice is therefore direct, though too infrequently expressed or even realized. The bene-

fits he gains from simplified practice accrue to him primarily through industrial competition, resulting in reduction of price, improvement in quality, or better service.

In considering benefits to the consumer, it should be emphasized that the ultimate consumer, who buys end products at retail for his individual use, is not the only one to be classified as a "user" of manufactured products. In each successive step in production and distribution, from raw material to finished article, the finished product of one industry may become the raw material for the next. Only a very few of our largest industries, notably in the automotive and fuel groups, control the entire process of production and distribution of any one end product. Even those few buy a certain proportion of materials and parts, and practically all equipment and tools, from other manufacturers. The consequence is that with negligible exceptions every industry and individual is a "consumer" of some products made by others. Even though a manufacturer, large or small, may turn out a highly specialized article in which he considers variety as essential, he still has to buy and use products in which excessive variety will cause waste and unnecessary expense to him. Here we find the dependence of industries upon one another. This interdependence of industries is exemplified each time a Simplified Practice Recommendation is developed.

Evidence has been accumulated to show that in the preparation of Codes of Fair Competition, under the National Recovery Act, considerable use will be made of Simplified Practice Recommendations, formulated by the interested industries in cooperation with the distributors and consumers, under the auspices of the Division of Simplified Practice.

As of September 5, 1933, information received from official and semiofficial sources indicates that in the Codes relating to certain specific industries and branches of industries references will be made to at least 57 Simplified Practice Recommendations.

This demonstrates industry's belief in the importance of sustained and continuous adherence to Simplified Practice Recommendations in their latest approved form. This association of active Simplified Practice Recommendations with the Codes has stimulated industry to propose new simplification projects, and has quickened the revision of some recommendations now active.

Opportunities for simplified practice on a national scale, throughout whole industries, are probably greater today than in 1921, with the most important trend, measured by possible savings, lying in the general field of distribution. Savings there will quickly redound to the benefit of the consumer.

Simplified practice is an activity that all will do well to understand and promote.

Simplified Practice Recommendations

Following is a list of Simplified Practice Recommendations arranged by groups. Recommendations which have been approved by general conference of industry and are now in process of acceptance are italicized. Copies of approved Simplified Practice Recommendations can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from the office of the American Standards Association.

Boilers, Engines, and Tanks—
Boilers; range; and expansion-tanks... 8–29
Tanks; storage, hot-water..... 25

Books and Printed Matter—
Bank-checks; Drafts; Notes; etc..... 50
Blank-forms; commercial..... 37–28
Blank-forms; warehouse..... 34
Checks; restaurant, guest..... 113–30

Brooms and Brushes—
Block-sizes; (for) brushes, calcimine (Dutch, Semi-Dutch, & Baby-Dutch) 121–31
Brushes; paint and varnish..... 43–28
Brushes; sweeping, floor..... 88–29

Ceramics—
Chinaware; cafeteria & restaurant..... 33
" ; dining-car..... 39
" ; hospital..... 40
" ; hotel..... 5

Chemicals—
Fungicides; and Insecticides, (packaging of)..... 41

Cordage, Twine, and Products—
Twine, cotton, polished..... 124–31
Twine; hard-fiber; and yarn, lath (Ply and yarn goods)..... 92–32
Twine; flax and hemp..... 136–32
" ; jute, soft-fiber..... 110–29

Drugs and Medicines—
Investment, dental (packaging of).... 117–30
Plaster, dental (packaging of)..... 117–30

Dry Goods and Notions—
Mattresses..... 2–32

Electrical Apparatus—
Batteries, earphone
Batteries, flashlight; packaging of.... 104–30
Brushes, carbon; and brush-shunts.... 56–28

Flashlight-cases, fiber & metal..... 68–33
Railway-materials, (overhead, electric; packaging of)..... 65–31
Railway-materials, (controller parts, electric; packaging of)..... 145–33

Explosives—
Cartridges; metallic..... 62
Shells; shot, paper, loaded..... 31–31

Fuels—
Coal, bituminous, high volatile (sizes & terminology)
Regional Recommendation RR1–29

Furniture—
Bedsteads..... 2–32
Beds; hospital..... 24
Blackboards; composition..... 75–29
Chairs; wooden, folding and portable.. 80–28
Ice-Compartments; refrigerator..... 109–29
Lockers; steel..... 35–28

Generators and Motors—
Railway Motor and Controller Parts, electric; packaging of..... 145–33

Glass and Glassware—
Bottles; carbonated-beverage..... 123–30
Bottles; milk (and caps for)..... 10
Containers, glass (for) apple butter, jellies & preserves..... 91–29
Containers, glass (for) cottage cheese and sour cream..... 148–33
Containers, glass (for) mayonnaise & kindred products..... 131–32
Lights, floor, roof, and sidewalk..... 49

Groceries—
Ice; cake-sizes..... 96–28
Canned peas, (sieve sizes for)..... 149–33

Hardware—
Bearings; roller (tapered)..... 67–33
Bolts; carriage, lag & machine (packaging of)..... 60–30
Bolts; plow..... 23–29
Hardware; builders' (Incorporated in Commercial Standard CS22–30).....
Nails, cut, small; & tacks, cut..... 47–28
Nails, wire, copper
Turnbuckles..... 71–28

Instruments—
Mirrors; cone-socket; dental..... 137–32
Needles; hypodermic, dental..... 108–29
Wheels; brush, dental..... 116–30

Insulating-Materials—
Brake-lining; automobile..... 66
Insulators; porcelain, one-piece..... 73
Millboard & Paper; asbestos..... 19–28
Refractories; cupola
Refractories; malleable, foundry..... 79–28

Leather and Leather Goods—
Suitcases; ladies
Trunks; dress, hand, steamer and wardrobe

Lumber and Timber—
Lumber (rotary-cut lumber stock for wire-bound boxes)..... 59
Lumber (softwood)..... 16–29
(And supplement, dated 1932)

Lumber-Products—
Handles; ash (grades)..... 76
Handles; hickory (grades)..... 77
Platforms; skid (lift-truck)..... 95–30
Tight-Cooperage; and tight cooperage stock
Tubs, butter; wooden..... 135–32

Machinery—
Extractors; commercial-laundry..... 139–32
Ironers; flatwork; commercial laundry. 140–32
Tumblers; commercial-laundry..... 141–32
Washers; commercial-laundry..... 142–32

Metals—
Bars; steel, reinforcing..... 26–30
Bobbins, for filling cop winders (textile)
Cones, for warp & knitting yarns
Iron and Steel, scrap (classification of). 58–28
Joists; steel, open-web..... 94–30
Roofing; iron and steel..... 78–28
Spirals; steel, reinforcing..... 53–32
Steel; sheet..... 28–29
Ternes; roofing..... 30–28
Taper tubes, for filling cop winders

Metal Products—
Barrels and drums; steel..... 20–28
Cans; (for) fruits and vegetables
Chain; welded..... 100–29
Cloth, wire; insect-screen..... 122–31
Doors; hollow-metal..... 82–28
Doors; kalamein..... 83–28
Fencing, wire, woven; & fence packages 9–28
Galvanized-Ware..... 55
Japanned-ware..... 55
Metal-lath..... 3–28
Nails, wire, copper
Partitions; metal (for) showers & toilets 101–29
Sieves; (for sizes of canned peas)..... 149–33
Silverware; sterling, flat..... 54
Spools; metal (for annealing, handling, and shipping wire)..... 63
Tinware..... 55

Windows; steel, solid-section 72–30
Screens; production, wire diameters (for mineral aggregate) 147–33

Minerals and Products—
Abrasive-grain-sizes 118–30
Abrasive-products (cloth & paper); coated 89–32
Asphalt 4
Brick; common, face (rough & smooth) 7
Brick; paving, vitrified 1–32
Brick; sand-lime 38
Concrete-Units; building 32
Curbstone, granite 102–33
Form-dimensions; (for) concrete ribbed floor-construction 87–32
Mineral Aggregate; (wire diameters, of production screens for) 147–33
Slate; blackboard 15
" ; roofing 14–28
" ; structural (plumbing & sanitary) 13–28
Tile, clay; (for) floors and walls 61–30
Tile; hollow, building 12
Wheels; buffing, full-disk 115–30
Wheels; grinding, dental lathe 130–32

Paints, Pigments, Varnishes and Products—
Color; (for) school-furniture 111–30
Paints, varnishes, & containers 144–32

Paper and Products—
Bags, glassine 107–31
Bags, paper, grocers' 42
Bags, paper, millinery & notion (Used by Dept. and Spec. stores) 129–31
Board, binder's 81–28
Books, composition 84–28
Bottle-caps; milk 10
Box-board (thicknesses of) 44
Boxes, corrugated (for Dept. and Spec. Stores) 128–31
Boxes, folding (Dept. & Spec. stores) .. 127–31
Boxes, folding, one-pound (for) coffee. 64–30
Boxes, set-up (Dept. & Spec. Stores) .. 126–31
Cartons & Molds; brick-ice-cream 120–31
Cones and Tubes; paper (for) textile winding 143–32
Cones, for warp & knitting yarns
Bobbins, for filling cop winders
Cups & cup-caps; (for) ice-cream 132–32
Paper 22–33
Paper; photographic 98–29
Paper; tissue; roll and sheet 46
Paper, tissue; waxed 125–31
Salt-containers 70
Tags; shipping, paper 93–29
Tape; sealing, Kraft No. 1 114–30
Taper tubes, for filling cop winders

Pipe, Pipe-Fittings, Plumbing-Fixtures, Tubes, and Tubing (Metallic)—
Elbows; conductor 29
Fittings 29
Pipe; conductor 29
Pipe, wrought-iron & wrought steel .. 57–32
Plumbing-fixtures; hospital 106–30
Plumbing-fixtures; vitreous-china, staple (Incorporated in Commercial Standard CS20–30)
Traps; lavatory & sink, brass 21
Trough; eaves 29

Rubber and Rubber Goods—
Rubber; dental, base and veneering (packaging of) 138–31
Shoe-goring; elastic 112–29
Tires; truck, (industrial) 103–29

Textiles (Yardage)—
Duck; cotton 27

Textile-Products—
Blankets; bed 11
Dressings; surgical 133–32
Gauze; surgical (construction) 86–28
Plaster; adhesive 85–28
Salt-containers 70
Textile; hospital & institutional cotton 74–30
Towels, terry; fast-selvage 119–31

Tools—
Blades; hack-saw 90–29
Blades; razor (packaging of) 69
Chasers; (for) adjustable & self-opening die-heads) 51–29
Cutters; milling 36–33
Files; and rasps 6
Jacks; screw, bell-bottom 97–30
Knives; pocket 99–30
Scoops; shovels; and spades 48
Tools; forged 17–31

Vehicles—
Wheelbarrows 105–32

Wood-Products—
Box-board (thicknesses of) 44
Boxes; corrugated (Dept. & Spec. stores) 128–31
Cases; shipping, fiberboard (for canned fruits & vegetables) 146–32
Cones, for warp and knitting yarns
Bobbins, for filling cop winders
Singletrees, doubletrees, & neckyokes. 134–32
Taper tubes, for filling cop winders
Tight-cooperage; and tight cooperage stock

Proposed Standards for the Measurement of Noise

by

Vern O. Knudsen,[1] *Chairman*
Sectional Committee on Acoustical
Measurements and Terminology

Agreement on reference levels, scales, and terminology of sound measurement will aid in the elimination of excessive noise

The value of quiet in all commercial buildings, residences, and in all buildings where people gather for work, rest, or pleasure, has been amply demonstrated in recent years. Workers in quiet surroundings can do more and better work than they can in noisy surroundings. In a quiet and non-reverberant office, for example, one has no difficulty in hearing or in being heard over the telephone; dictation is easy, and free from errors in the recognition of the sounds of speech, which are so frequent and annoying in noisy rooms; formal conferences or informal conversations proceed without the participants failing to hear what is said; and the entire nervous system of the worker is relieved from the incessant bombardment of irritating noises.

The economic value of quiet in offices is based upon extensive studies of the effect of office-quieting on the efficiency of workers. Thus, the acoustical treatment in a certain large office cost $6,000. It was estimated that if this cost were prorated over ten years, including interest at 6 per cent, the cost would be 2 cents a day for each employee. It would require an increase in the efficiency of the employees of only one-half of one per cent to cover the cost of the required acoustical treatment. Tests by many companies have shown that the increase in the efficiency of clerical workers, for example, amounts to as much as 5 to 12 per cent. The reduction of noise in the telephone receiving room of a telegraph station produced a decrease of 42 per cent in the number of errors and a decrease of 5 per cent in the cost per message.

In consequence of these established facts, noise, its measurement, and its elimination, have become major problems in industry and society. Noise meters have been developed and sold by several electrical and acoustical concerns. Many of these meters have been useful for measuring the noise in buildings and out of doors—the noise of motors, gears, fans, telephones, automobiles, trams, airplanes, etc. But there have been no standard units or scales for the measurement of noise, and consequently the meters could yield only relative measurements. Measurements made with one meter were not, as a rule, comparable with those made with another, and in many instances the same meter would rate one noise as greater than another, although the auditory judgment of all observers would rate the lesser noise as the louder one! The urgent necessity for the standardization of units, scales, and instruments for the measurement of noise is thus obvious.

In January, 1932, there was organized through the auspices of the ASA, with the Acoustical Society of America as sponsor, a Sectional Committee on Acoustical Measurements and Terminology. There are at present four subcommittees working on the following projects: fundamental acoustical measurements, nomenclature and definitions, the absorption and insulation of sound, and the measurement of noise.

The noise measurement standards

Already the Subcommittee on Noise Measurements (of which Dr. Harvey Fletcher is chairman) has developed some tentative standards in connection with sound-intensity units and scales, and the measurement of noise, which should go a long way to alleviate present difficulties. At a meeting of the sectional committee held in Chicago, June 26, 1933, and attended by 20 members representing 12 technical societies or industrial groups, the tentative standards proposed by the Subcommittee on Noise Measurements, with slight modifications, were adopted. The principal provisions of the proposed standards can best be made clear by quotation of the following paragraphs. The standards are to be printed in full and circulated widely both in this country and abroad. Discussion will be solicited from interested persons.

[1] President, Acoustical Society of America.

"1. The reference intensity for intensity level comparisons shall be 10^{-16} watts per square centimeter. In a plane or spherical progressive sound wave in air, this intensity corresponds to a root mean square pressure "p" given by the formula

$$p = .000207 \sqrt{\frac{H}{76}} \sqrt{\frac{273}{T}}$$

where p is expressed in bars, H is the height of the barometer in centimeters, and T is the absolute temperature. At a temperature of 20 C and a pressure of 76 cm of Hg, p = 0.000204 bars.

(NOTE: This is approximately the root mean square pressure of a plane sound wave in air, having a frequency of 1000 cycles per second, which is just barely audible in quiet surroundings to the average person with normal hearing acuity.)

"2. The intensity level of a sound is the number of db above the reference level.

"3. The pressure level of a sound is 20 times the logarithm to the base 10 of the ratio of the pressure p to the reference pressure p_0. The unit of pressure level is the db.

"4. The reference pressure, p_0, for sound pressure measurements is 0.0002 bars.

"5. A plane or spherical sound wave having only a single frequency of 1000 cycles per second shall be used as the reference for loudness comparisons. . . . . .

"6. The loudness level of any sound shall be the intensity level of the equally loud reference tone at the position where the listener's head is to be placed.

"7. In observing the loudness of the reference sound, the observer shall face the source which should be small and listen with both ears at a position so that the distance from the source to a line joining the two ears is one meter. . . . . .

"For the purpose of practical noise measurements and the design of sound or noise meters there is need for agreement upon equal loudness contours of pure tones. Also, there is some need for an additional loudness scale based on a group judgment as to what constitutes a certain percentage reduction in the loudness of sound. For both of these things reliance must necessarily be placed on experimental data. A number of investigations have been made for the purpose of obtaining such data and from their results there can be derived such relations which can be taken as the best indications of the present material, with, however, the necessary recognition that they are tentative and may need modification as further data are obtained.

"8. The loudness level of a pure tone propagated as a plane or spherical wave in air, and having a frequency of f cycles per second and an intensity level βdb shall be defined by the set of curves given in Figure 1."

(NOTE: Figure 1 consists of a set of curves obtained by Fletcher and Munson, and constitute a part of the present proposed standards.)

"9. Until more accurate data are available, the relation between loudness and loudness level shall be that given by the curves shown in Figure 2."

(NOTE: This curve, prepared by Fletcher, is useful for converting the results of physical measurements on noise into the sensation of loudness, and provides a means for calculating, for example, the fractional reduction in loudness which results from a known reduction in intensity level—a matter of prime importance in the acoustical design and treatment of rooms and in all problems concerned with the abatement of noise. A quantitative scale for loudness comparisons is thus available. For example, a loudness level of 70 db corresponds to a loudness of 8000, and a loudness level of 59 db corresponds to a loudness one-half as great, that is, 4000.)

The proposed standards, as is revealed by the curves in Figure 1, will make the intensity level of the 1000 cycle reference tone the same as its loudness level. This is also approximately true for all frequencies between 500 and 10,000 cycles, but at frequencies below 500 cycles a certain change in the intensity level of a tone results in a greater change in loudness than results from the same change in the intensity level for frequencies above 500 cycles.

Work of other subcommittees

Closely related to the work of the Subcommittee on Noise Measurements is the work of the other three subcommittees. The Subcommittee on Acoustical Terminology (H. A. Frederick, chairman) already has made valuable progress in the standardization of acoustical nomenclature and definitions —most of this progress was made during the past three years by several members of the present subcommittee who then constituted the Acoustical Society of America's committee on acoustical terminology. Definitions have been proposed for 144 of the most important terms in the general field of acoustics and in such specialized fields as architectural acoustics, hearing, music, transmission theory and systems, and acoustical instruments. These defi-

nitions have been widely circulated, have been published in the *Journal* of the Acoustical Society of America, have been translated and reprinted in foreign journals, and are adopted by many contributors to technical publications on acoustics.

The work of the Subcommittee on Fundamental Sound Measurements (C. R. Hanna, chairman) is concerned with "the standardization of such fundamental methods of measurement as are required for the several activities of the sectional committee," such as calibrating standards to serve as acoustical measuring devices for both transient and steady-state phenomena. The measurement of sound intensity will receive the first consideration of this subcommittee. Obviously, this work is inseparable from the basic work on the standardization of noise-measuring instruments.

The work of the Subcommittee on Sound Insulation and Sound Absorption Measurements (Professor F. R. Watson, chairman), while not related directly to the measurement of noise, is concerned with the standardization of methods of measuring sound transmission and sound absorption which will make possible a reliable and absolute basis for calculating the reduction of noise which can be attained by the use of any building materials or structures.

The work of the ASA Sectional Committee on Acoustical Measurements and Terminology is not only making progress in the standardization of methods and instruments for the measurement of noise, which will be a benefit to the manufacturers of noise meters, but, of far greater importance, it is arousing public interest in the reduction and control of noise. As the technique of noise measurement improves and standardizes, means will become available for relieving our metropolitan population from the insidious noise of our mechanized civilization.

International Conferences to Consider Problems of Weights and Measures

The International Committee on Weights and Measures will hold its regular biennial meeting in Paris beginning September 26; a General Conference on Weights and Measures, which is held at intervals of six years, will be convened October 3. The General Conference includes representatives of all of the 32 countries which have joined in the Metric Convention, while the International Committee consists of 18 members elected individually. Dr. Arthur E. Kennelly of Harvard University was recently elected as a member, succeeding the late Dr. S. W. Stratton. Dr. Kennelly and Theodore Marriner, Counselor of the Embassy at Paris, will represent the United States at the General Conference.

Important subjects scheduled for discussion at these meetings include the use of light waves as standards of length, the confirmation of the international scale of absolute temperatures, the adoption of a revised system of electrical units to supersede the present international units, and the acceptance of a common fundamental standard for intensity of light.

Simplified Practice Recommendation for Wire Diameters Published

Simplified Practice Recommendation R147-33 covering wire diameters for mineral aggregate production screens, is now available in printed form, according to an announcement by the Division of Simplified Practice of the National Bureau of Standards.

The recommendation, which was proposed and formulated by members of the industry, provides for the width of clear opening, and the diameter, in inches, of light, standard light, standard heavy, and heavy wire used for screens in production of mineral aggregates. This simplification program will effect a reduction of approximately 75 per cent in the number of wire diameters formerly used.

Copies of this recommendation may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from the American Standards Association, for five cents each.

A.S.T.M. Issues New Tentative Standards

The American Society for Testing Materials has recently issued three new tentative standards on Method of Test for Knock Characteristics of Motor Fuels (D 357-33 T); Tentative Specifications for Concrete Building Brick (C 55-33 T); and Tentative Standard Grain Size Chart for Classification of Steels (E 19-33 T).

The Method of Test for Knock Characteristics of Motor Fuels is based on the apparatus and procedure developed by the Cooperative Fuel Research Committee composed of representatives of the American Petroleum Institute, National Automobile Chamber of Commerce, Society of Automotive Engineers, and the National Bureau of Standards.

Copies of the new tentative standards may be obtained from the American Society for Testing Materials, 1315 Spruce Street, Philadelphia, or from the American Standards Association at 25 cents each.

Foreign Standards Available from ASA

New foreign standards available to ASA Members for loan or purchase through the ASA office are listed below. They are available in the language of the country under which they are listed. In requesting copies of the standards it is necessary to list only the serial numbers preceding the titles. Send either a post-card or a note containing the name of the person wishing to receive the standards, and the numbers of the standards desired. The card or envelope should be addressed to the American Standards Association, 29 West 39th Street, New York.

Serial Number

Great Britain

405. Wrought light aluminium alloy bars for general engineering purposes (this specification covers the alloy usually known as duralumin)
406. Wrought y-alloy bars for general engineering purposes (specific gravity not greater than 2.85)

Sweden

407. Conversion table, inches to millimeters, exact values 0.0001 in.—10 in.
408. Conversion tables, millimeters to inches, rounded values, 0.001—100 mm
409. Conversion tables, inches to millimeters, exact values, 1/64 in.—1 in.
410. Conversion tables, inches to millimeters, rounded values, 1/64 in.—10 in.
411. Diameters of piston valves, valve rods and valve ring sections for locomotives
412. Diameters of steam cylinders, pistons and piston ring sections for locomotives
413. Geometric number series for standardization purposes
414. Key sections
415. Keys and keyways in shafts and hubs
416. Metric fine threads for machine construction, pitch 2 mm
417. Metric fine threads for screws and nuts
418. Metric thread systems, diagram
419. Metric threads for machine construction, pitch 0.5 mm
420. Metric threads for machine construction, pitch 0.75 mm
421. Metric threads for machine construction, pitch 1 mm
422. Metric threads for machine construction, pitch 1.5 mm
423. Metric threads for machine construction, pitch 3 mm
424. Metric threads for machine construction, pitch 4 mm
425. Metric threads for machine construction, pitch 6 mm
426. Milling cutters and milling cutter arbors, cross section of hole and arbor
427. Squares for tool shanks
428. Standard diameters
429. Taper roller bearings
430. Tolerances on thrust ball bearings

Canada

431. Essential requirements and minimum standards covering electrical equipment, part two, Canadian electrical code, specification no. 3, construction and test of electrical equipment for oil-burning apparatus
432. Essential requirements and minimum standards covering electrical equipment, part two, Canadian electrical code, specification no. 2, construction and test of electric signs

Germany

433. Air compression, beveled fittings for hose couplings
434. Air compression hose clamps
435. Coal and waste cars; 900 mm (35 inch) gage track; brake scheme, brake tension rod head
436. Coal and waste cars; 900 mm (35 inch) gage track; hose couplings for coal cars; assembly and assembled measurements
437. Coal and waste cars; 900 mm (35 inch) gage track; hose couplings for waste cars with connections and fittings; assembly and assembled measurements
438. Coal and waste cars; 900 mm (35 inch) gage track; leaf springs and spring strap
439. Electric locomotives; 900 mm (35 inch) gage track; hose couplings for mine locomotives, with connections and fittings; assembly and assembled measurements
440. Steel cross ties, section profiles
441. Track switches 600 mm (24 inch) gage, frog for simple 1:5 switch with 93/18 rails; assembly
442. Track switches 600 mm (24 inch) gage, frog for simple 1:5 switch with 93/18 rails; frog plate
443. Track switches 600 mm (24 inch) gage, frog for simple 1:5 switch with 93/18 rails; rail piece details
444. Track switches 600 mm (24 inch) gage, guard rail and fittings for simple 93/18 rails
445. Track switches, 450 to 630 mm (18 to 25 inch) gage, parallel 1:5 track junction; track layout measurements

The Basic Terminology of Standardization[1]

by

M. Shereshevsky

Leading industrial nations have varied interpretations of "standardization," "normalization," "unification," and "typization"; standardization of terms necessary

The fundamental terms in the domain of standardization have not yet been uniformly interpreted. Very often one term is used for several different concepts, and vice versa one single concept is designated by several different terms. This is due to a variety of causes.

In U.S.S.R. we have taken our standardization terminology from the lexicon of foreign standardization bodies, which originated under various conditions in capitalistic countries. For this reason terms such as "standardization," "normalization," "unification," etc., have meanings which can be traced to the countries in which they originated. Likewise, linguistic peculiarities have brought about a non-uniform interpretation of the terms in various countries, each term having a different meaning in each language.

In the present work we shall attempt to clarify the fundamental concepts of standardization by presenting a critical analytic comparison of certain fundamental terms of standardization in the principal languages, including the terms used in the Russian language, our ultimate aim being the formulation of uniform definitions of the terms. The fundamental terms which will be discussed are "standardization," "normalization," "unification," "typization," and "simplification." This limitation of the subject is arbitrary, yet necessary for clarity.

I

Rationalization

Before taking up these terms, however, let us first define the basic relationship between standardization and rationalization.

The term "rationalization" originated in the United States of America before the World War, but its popularity started in Germany after the World War, when the isolation of Germany and the destruction of her national economy served as a stimulus for the adoption of a series of industrial measures aimed to restore the competitive capacity of German industry in the world markets.

The most characteristic definition of this movement was given at the 1927 meeting of the National Economic Conference in Geneva. This Conference defined industrial rationalization as embracing scientific management, standardization of materials and products, simplification of manufacturing practice, and all manner of improvement in organization, transportation, and marketing of goods.

This definition of rationalization, as pointed out by Reuter,[2] makes it approximately coextensive with what is known in the United States of America as elimination of waste in industry, which according to American data, comprises standardization, simplification, and scientific management.

Schiffer[3] thinks that rationalization comprises two fundamental series of measures: scientific management and standardization. Standardization, which in reference to rationalization stands as a species with reference to a genus, forms the foundation for other rationalization work.

The definition given by the International Economic Conference, which is most characteristic of capitalistic rationalization, states that rationalization is "a method used in technology and in production management directed toward the reduction of waste in materials as well as in labor." Very close to this is the definition of the German Committee of Economy: "Rationalization consists in the devising and application of all means afforded by technology and planned regulation for the increase of economy. Its aim is the enhancement of national welfare by means of cheaper, greater, and better production."

There can hardly be any major differences in the interpretation of this term, and we can therefore conclude with this definition:

> Capitalistic rationalization consists of measures for the improvement of engineering and working methods which under present condi-

[1] An abridged translation by I. Gutmann, Associate Editor, Engineering Index, New York, of an article published in *Vestnik Standartizatziyi*.

[2] Reuter. *Handbuch der Rationalisierung*. Berlin, 1930.

[3] Schiffer. *Die Oekonomische und Sozialpolitische Bedeutung der Rationalisierungsbestrebungen*. Berlin, 1928.

tions of competition will give greater profits with the existing material expenditures.

Standardization must, therefore, be considered as a species of rationalization.

2

Standardization, normalization, and unification

The basic elements of standardization, a term which has a great number of definitions in foreign and in Russian literature, may be considered least debatable. They consist on one hand of the process of selection from existing products, methods of designation, or units of measurement, and on the other hand of the setting up of one or several models based on scientific research. The fundamental elements of the term "standardization" will serve as starting points for the discussion which follows.

It is quite different when we come to the interpretation of the terms "normalization" and "unification." The difficulty arises from the fact that the basic terms "standardization," "normalization," and "unification" have different meanings in different languages. The one and same process of the reduction of a great number of products, methods, and designations to a smaller number is called "standardization" in the United States and in Great Britain, "Normung" in the German language, "normalisation" in French. The majority of the European standardization committees designate themselves with a word including the root "norm": "Normenausschuss" (Germany); "normalisation" (France); "normalien" (Switzerland); "normalisatie" (Holland); "normalizacyny" (Poland); only the Belgian Committee call themselves a "Standardization Association."

All these terms as well as the Italian term "unificazione," serving as the designation of the Italian Committee, are translated in the English language by the word "standardization."

Such is the terminology not only of the official Yearbook of the American Standards Association; but also of American and British literature and practice.

Neither the *Encyclopedia Brittanica*, nor the *Slater Technical Dictionary*, nor the *Management Handbook*, nor any other encyclopedias or reference books, as much as mention the term "normalization."

In German literature the term "standardization" is used only as a foreign word of English origin. Thus the Meyer encyclopedia states that "in Great Britain and in the United States of America this term implies measures, weights, and coins corresponding to models established by law."

Later, when the terms "standard" and "standardization" became much more prevalent, the German word coming nearest the English-language term "standardization" was, according to Schiffer, "Vereinheitlichung"; that is, unification.

The *Slater Technical Dictionary* does not recognize the word "standardization" in the German language, and gives as the equivalent of the English words "standardization" and "to standardize" the German words "Normalien" and "Normalisieren." Slater makes the rather common mistake of considering the German terms "Normalisierung" and "Normung" as identical, forgetting that "Normalisierung" does not correspond to the English term "standardization," being narrower in scope.

It is interesting to note that the Yearbook of the American Standards Association in enumerating fundamental varieties of standards, first points out standards of interchangeable parts without designating them by any special term similar to the German term "Normalisierung."

"Normalisierung" is derived from the word "Normalien" not "Norm" and it means "established dimensions for application to a great number of machine details," that is, standardization of machine construction details, the aim being interchangeability of parts.

The prevailing interpretation of the term "Normalisierung" and its application to the much wider concept "standardization" is due, first of all, to the fact that industrial standardization in Germany, as well as in other countries, was originally concerned only with machine parts. This process started long before the expansion of standardization during the World War and the period which followed, and the first standardization institution founded in Germany during the World War was named "Normalienausschuss fuer den Maschinenbau," because it was to set up unified standardized machine details. Later, in 1917, when the functions of this organization were extended to take in other industrial products, the name was changed to "Normenausschuss der Deutschen Industrie."

The same confusion as to the terms "Normalien," "Normalisierung," and "Normalisieren" is found also in German-Russian dictionaries.

In contradistinction to "Normalisierung," the German term "Normung" has a wider meaning than standardization of details. Reuter defines the scope of "Normung" as follows: "An agreement involving manufacturers, merchants, and consumers as to the establishment of uniform terms, designations, distinctive marks, types, forms, materials, degrees

of precision, testing methods, methods of making rules for production and management, specifications in construction, safety, and methods of production." According to another writer—Schiffer—the exact scope of the term "Normung" is somewhat debatable and may be interpreted in one of three ways: (1) as standardization of detail parts; (2) standardization or unification in general; and (3) unification of abstract terms only, such as, measures, designations, etc.

Lage,[4] who holds a similar opinion, says that "Normung" is considered by some authors as identical with "Vereinheitlichung," while other authors think it is synonymous with the term "Normalisierung." Lage himself, however, considers "Normung" as an intermediate term between "Vereinheitlichung," "Normalisierung," and "Typisierung" (typization).

But most frequently the term "Normung" is used in the sense given to it by Reuter, this definition being supported by both the German standardization committee and the Wirtschaftlichkeit Kuratorium.

German-English dictionaries translate the word "Norm" as "standard" ("Als Norm gelten"—"to serve as a standard"); also as "rule" and "model."

From the above we can conclude, as to the use of the term "Norm" in Germany, that it is somewhat broader than the term "standardization" because it refers to rules in all branches, yet it comes closest to the English term "standard."

"Normalisierung," referring to standardization of machine parts, is a species term within the genus term "Normung."

In parallel with this, the Germans use the term "Vereinheitlichung" which is considered equivalent to the English term "standardization."

The term "standardization," "Standardizierung," is used by the Germans only in one industry—agriculture. Kaysenbrecht,[5] Juengst,[6] and others treat of standardization of agricultural products as meaning measures which would secure maximum prices in the domestic and foreign markets. In the standardization of agricultural products German organizations did not go their own way, as they did in industrial standardization, but largely followed the experience of the United States and other countries.

While industrial products can be manufactured according to definite dimensions and quality standards, the products of capitalistic agriculture are made to conform to standards by means of sorting, packing, and similar commercial processes. Germans have adopted the novel term "Standardizierung" to emphasize this difference between industrial standardization and standardization of agricultural products.

German standardizers are not alone in the use of this term. They are supported by the Czechoslovakian standardization committee, which presented a project of uniform terminology to the International Conference on Standardization held in Milan in the spring of 1932. In this project the Czechoslovakian Committee proposes to reserve the use of the term "standardization" ("Standardizierung") to agriculture exclusively.

In the French language the term "normalisation" corresponds to the English term "standardization" and to the German terms "Normung" and "Vereinheitlichung," but it is not identical with the German term "Normalisierung." The French standardization association (AFNOR) approves of this term, by its very name proclaiming that the French term "normalisation" corresponds fully to the English term "standardization." To the Czechoslovakian proposal for making the term "standardization" apply only to agricultural products, the French Committee answered that the French term "normalisation" corresponding to "standardization" referred to all branches of national economy and therefore could not be reserved for agriculture only. The words "standardization" and "standard" are in the nature of Anglicisms in the French language and are seldom used.

The Belgian Committee is an exception, using the term "standardisation" which is also made to cover the concept corresponding to the German term "Normalisierung." On the other hand, the French Committee uses the term "unification" for the standardization of interchangeable parts in machine construction, defining it as "the setting up of uniform dimensions of parts, facilitating interchangeability." The same interpretation is held to by the Italian Committee which designates its activity in the machine construction industry as "unificazione."

Thus, our juxtaposition of terms leads to the following conclusions: The French and Italian Committees use the term "normalisation" as corresponding to the English "standardization" and the German terms "Normung" and "Vereinheitlichung." The French term "unification" is equivalent to the German term "Normalisierung." As to the German term "Vereinheitlichung" it seems to be equivalent to the English term "standardization," the French term "normalisation," and the German term "Normung." Standardization of machine details for inter-

[4] Lage. *Die Vereinheitlichung Industrieller Produktion.* Jena, 1922.

[5] Kaysenbrecht. *Standardizierung, Rationalisierung Landwirtschafts Werbewerk.* Berlin.

[6] Juengst. *Absatzgestaltung in der Landwirtschaft.* Berlin, 1927.

changeability is called "Normalisierung" by the Germans, "unification" by the French, and "unificazione" by the Italians.

3

Simplification

The term "simplification" originated during the years of the World War with the organization of the Conservation Division of the War Industries Board in the United States (1918). Its purpose was to eliminate waste of labor, capital, materials, and equipment in all branches of production, which meant a considerable limitation in assortment of products in various branches of industry. This very process was designated "simplification."

By the American definition, "simplification" in its widest sense is a process for making things simpler, less complex, or less difficult, meaning, particularly, reduction in number of types and sizes of products. These products need not be standardized, however.

Still, some American authors are inclined to regard "simplification" as the first stage in standardization work, the next stages being the development of the standard on a theoretical basis, and simplification of production.

Thus, "simplification," which originated in the United States and spread over all of Europe may be defined as "the elimination of superfluous multiplicity in assortment." As pointed out by American authors, simplification is based on existing practice without any scientific research and without the development of types of goods which might serve as models. As a rule, in capitalistic countries, "simplification" proceeds on the basis of a market analysis intending to eliminate products in least demand.

The term "simplification" is recognized to some extent in Germany, Great Britain, France, and other countries, where it is interpreted as in the United States. In particular the French standardization committee considers that "the object of simplification is the reduction of a definite number of types to those only which are necessary and adequate; it does not refer to changes in equipment."

4

Typization

The term "typization" occurs but seldom in the literature and practice of Great Britain, the United States, France, and Germany. German writers (particularly Schiffer and Lage) consider "typization" ("Typisierung") as the standardization of manufactured products in contradistinction to "Normalisierung" which is the standardization of machine parts.

The French standardization committee expresses the opinion that the word "typisation" is very seldom used and has no precise meaning, approximating the sense of the Swiss term "Typung," which refers to standardization within one concern and should be abolished. In the English language the word "typization" is still less used though the word "type" in the sense of model is widely used.

5

Russian terminology

Pre-revolutionary Russian technical literature developed largely on the basis of German influences, and for that reason we find in it the terms "norma" and "normalizatziya" which are fully equivalent to the German terms "Normalien" and "Normalisierung." The word "norma" is also defined as rules for the testing of machinery. The word "standardizatziya" appeared in Russian literature after the revolution, when under the influence of a study of American experience, this term acquired a meaning wider than the standardization of machine parts. Yet the term "normalizatziya," being of long standing in our literature is used even nowadays in the sense of "standardizatziya." To avoid contradiction and redundance it will be necessary to apply the term "normalizatziya" to standardization of machine parts exclusively.

As to the word "norma" in so far as it corresponds to the German word "Norm," meaning nothing more than the term "standard," it may be advisable to eliminate it entirely from our terminology. On the other hand, in the construction industry the term "norma" is used in the sense of specifications; thus we speak of "normas," or specifications for the testing of cement, "normas" of reinforced concrete structures, etc. Our term "normali" which is derived from the German "Normalien," meaning standards for machinery parts, is used by us for the designation of factory standards developed and operating within one plant, which hardly justifies it as an independent term.

Our terms "unificatziya" and "typizatziya" generally designate two stages of one process. "Unificatziya" means the elimination of superfluous multiplicity of assortment, which makes it fully equivalent to the American term "simplification." The term "typizatziya," which we use chiefly in the machine construction industry, means selection on the basis of several fundamental properties only.

We also use the term "simplificatziya," which is the Russian version of "simplification," but in a sense entirely different from the one current in the United States. With us the use of this term is restricted to the elimination of superfluous details in one given product (machines, structures, etc.). It is

not a case of standardization consisting in selection from a series of products, but is merely the making simpler of one given product.

6

Summary

We may finally summarize the fundamental terms of standardization[7] as follows:

Capitalistic *standardization* is the selection, development, and establishment of models of products and production methods, designations, and units of measurement, which originated under conditions of mass production as a means of decreasing costs of production for the purpose of increasing competitive capacity.

Normalization is the standardization of machine details.

Typization is the standardization of manufactured products embracing some of their most important characteristics (particularly gages, sizes, capacity of machines, etc.).

Unification is the reduction of the assortment of manufactured products to a lesser number of types distinguished by greater engineering and economic effectiveness.

These are proposed merely as a starting point for further discussion and development of the fundamental terms of standardization by the whole corps of Soviet standardization workers.

[7] Mr. Shereshevsky does not include "simplification" in this summary.

Conference Will Consider Standards for Motor Vehicles

A conference of representatives of twelve states and of the District of Columbia will be held at Harrisburg, Pennsylvania, in October to consider the practicability of uniform legislation and regulation of size, weight, height, and length of motor vehicles transporting passengers and freight. The conference was called by the American Legislators' Association at the request of the Pennsylvania legislature. Participating representatives will be from the states of Maine, New Hampshire, Massachusetts, Vermont, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, Ohio, Indiana, Illinois, West Virginia, Virginia, and the District of Columbia.

In the course of its study the conference will have before it for consideration two formal codes, the informal recommendations of the governor of Pennsylvania made in December to many state governors, and the studies already made by the United States Bureau of Public Roads. The two codes which will be considered are those adopted by the American Association of State Highway Officials at its annual convention in 1932, and by the Automotive Transportation Code Committee of the Society of Automotive Engineers, respectively.

If an agreement can be reached at the conference, recommendations will be made to the legislatures of the states represented for the adoption of such legislation.

Federal Specifications Available

The following Federal Specifications were published recently and may be purchased from the Government Printing Office, Washington, D. C., at five cents each or borrowed or purchased from the American Standards Association: aluminum powder for paints; metal bases for plaster and stucco construction; flexible insulating blanket; concrete brick; fire-clay brick; aluminum-oxide abrasive cloth; sensitized cloth; semi-rigid insulating felt; vertical file folders (calendered); surgeons' rubber gloves; structural insulating fiber-board; smooth-bore suction water hose; black waterproof drawing ink; laundry appliances; battleship linoleum; nail sets; tucks packing; waterproof artificial abrasive paper; white and colored rag bond paper; flint paper; garnet paper; waterproof garnet paper; cast-iron (bolted-joint) water pipe; welders' hand shields; rubber stoppers; automobile and motorcycle inner tubes; seamless copper tubing (for general use with I.P.S. flanged fittings); seamless copper tubing (for use with soldered or flared fittings); men's light-weight flat-knit cotton undershirts; men's medium-weight ribbed-knit cotton-wool undershirts; 250-pound malleable-iron or steel unions; mixing varnish for aluminum paint; composition wall-board.

Simplified Practice Program for Textile Machinery Parts

A simplified practice program covering hole sizes for taper tubes and bobbins for filling cop winders, and basic dimensions for wooden cones for warp and knitting yarns was approved by a general conference of all interests in the industry, held under the auspices of the division of simplified practice of the National Bureau of Standards on June 2. This program will be divided into two simplified practice recommendations: one covering taper tubes made of any material for filling cop winders, and the other covering basic dimensions of wooden cones and hole sizes for bobbins for filling cop winders.

Editors Comment on Transfer of Commercial Standards Work

The following are abstracts from a few of the many recent editorials commenting on the transfer of certain activities of the Bureau of Standards in the field of commercial standardization, simplified practice, building and plumbing codes, and safety to the ASA:

From the Washington, D. C. Post, July 21:

It is gratifying to note that the American Standards Association will carry on several functions that are being relinquished by the Bureau of Standards for economy reasons.

Standardization is not popular so far as tastes, habits and personality are concerned, but its value when applied to plumbing equipment, ball bearings, gears, bolts and nuts, machine tools and railroad signals is not open to question. It is estimated, for example, that the work which the Bureau of Standards is discontinuing has resulted in savings of $200,000,000 for the lumber industry. When all industries operating in the same field conform to simple standards the market of each is broadened, the public is given better service at less cost, and future planning and financing are simplified. Retail dealers are able to carry more complete lines of goods under standardized practices.

The Bureau of Standards was a pioneer in this field. It has rendered highly valuable service to industry as well as to the public. While fully cognizant of this service, industry now desires to carry on this work in its own way. There is some fear that political control might be exercised in the future if these activities should be left to a Government agency. Industry appears willing to undertake the full responsibility of shaping its own standards, and there is no reason why it should not do so.

From the New York Sun, July 21:

The Secretary of Commerce has just announced that for economy's sake part of these activities are to be abandoned. Tasks now done by the divisions of simplified practice, housing and building, trade standards and specifications, as well as safety code studies, are to be left to the American Standards Association.

This is a wise and logical development of the industrial standards system.

Through this and other agencies private business has demonstrated its ability to regulate itself so far as many of its common needs are concerned. It is right that business should support and carry out such studies as those leading to formulation of standards for its own use.

From Chemical & Metallurgical Engineering, August, 1933:

With the announcement last month that Government economy measures have made it necessary to transfer certain activities in simplification, commercial standards, safety and building codes from the Bureau of Standards to the American Standards Association, a change in a considerable part of our standardization procedure became necessary. But at the same time, industry received, through the Association, an opportunity greater than ever before for its effective self-regulation. The move is one that is well within the spirit of the National Recovery Act.

How successful this regulation will be depends very largely on the continued and increasing support which industry must accord the Association. After its 15 years of existence, ASA is now supported by 37 nationally active member bodies and numerous companies and individuals. Some 475 organizations and industrial concerns are actively cooperating in the development of standards.

No reasonable doubt of the value of such an organization can exist. Whole-hearted support from all of industry is the price that must be paid if the added burden is to be carried properly and if we are to make the most of our opportunities.

From Mechanical Engineering, September, 1933:

When there exists an experienced and well-organized agency, such as the ASA, which is representative of industry and the consumer, and which has such an honorable record of successful achievement to its credit, such work as the Department of Commerce has been doing in the sections that are being given up can safely be turned over to it. Many persons will see in this opportunity which is being offered to the ASA a hopeful sign that the Government is willing to let industry look after some of its common problems. While the cost of doing the necessary work will be eliminated from the departmental budget, it will have to be assumed by those who support the work of the ASA. Industry will probably be better satisfied to make the contribution directly for work done under its own procedure than indirectly through a tax-supported Government bureau. If the interests of all who are involved in industrial standardization are impartially and sympathetically guarded, the new arrangements should prove an interesting and convincing adventure in industrial self-government.

From American Machinist, August 16:

Word that the work being done by several divisions of the Bureau of Standards is to be taken over by the American Standards Association is news of a profitable economy move on the part of the Administration.

The placing of this work under a single directing organization should prove to be a real help to those engaged in it. Industry is the principal beneficiary of standards work and should therefore foot the bills and have a voice in its control. As President Coonley of ASA points out, NIRA codes will undoubtedly call for a lot of rapid work in standardization and simplification, qualitative and dimensional. The new set-up will expedite matters appreciably.

Empire Standard Products Favored by Canadian Government

The following announcement is reprinted from the last issue of the C.E.S.A. Bulletin, *quarterly publication of the Canadian Engineering Standards Association:*

On March 14, 1933, an Order-in-Council was issued by the Privy Council of the Dominion Government stating that whenever materials or goods not produced or manufactured in Canada are required by any Government department, or by any contractor engaged in government work, provision shall be made in the tenders providing that such material shall be of Empire production or manufacture and that, where standards are specified, an Empire standard shall be adopted unless it is conclusively shown that goods or materials in question cannot be obtained in the Empire. It is understood that this will apply to the Canadian National Railways and every Board, Commission, or other similar body under the control of parliament who are requested to adopt a similar rule with reference to purchase and contracts.

The Dominion Department of Public Works has recently included in their standard form of contract a clause referring to C.E.S.A. standards which reads as follows:

> "Unless otherwise expressly provided in the specification, all goods or materials supplied shall conform to the specifications of the Canadian Engineering Standards Association, or the specifications of the recognized Standards Association in the country of origin in the Empire, and in cases where goods or materials are required, which are not of Canadian production or manufacture, the standards above mentioned shall apply."

This action on the part of the Dominion Government should be of great assistance in promoting a wider adoption of C.E.S.A. standards.

Savings to Consumer Predicted Through Standardization of Casings

The support of all oil operators for a program of standardization intended to reduce the present number of sizes and weights of casing is urged by Bruce Barkis of the Rio Grande Oil Company and R. D. Copley of the Standard Oil Company of California in an article "Sub-Surface Economies in Drilling" appearing in the *Oil Weekly*. The result of reduction in casing stocks, they say, will bring savings to the consumer and will permit further economies by aiding in the standardization of bit sizes. They refer to a study by Brad Mills (an item pertaining to this study appeared in the October, 1932, issue of INDUSTRIAL STANDARDIZATION, page 256) showing that 83 sizes of drilling bits were made and used in California during the past year. In many cases, the size increments were only ⅛ inch. Mr. Mills concluded that a saving of 15 per cent could be made in bit costs through the elimination of 50 per cent of the sizes. "Such an economy is entirely possible," say Messrs. Barkis and Copley, "although perhaps the aforementioned standardization work on casing must be effected before bit reductions can be fully accomplished."

Safe Ropes and Cables

To promote better knowledge of the proper use of ropes and cables, the National Safety Council has published a pamphlet on *Manila and Wire Rope*. Proper handling, storage, and splicing of manila ropes and wire ropes and cables are discussed at length. Methods for determining whether ropes and cables in service for a period have reached the end of their useful life are presented. There is also a discussion of the important question of overloading both manila and wire rope, particularly when these are used as slings or tackle. Attachments and connection, as well as proper lubrication, of wire ropes are completely treated.

This pamphlet supplements the American Tentative Standard on Wire Rope for Mines (M11-1927), in the field of wire ropes, and also covers the safe use of manila ropes.

Compliance with Safety Codes Required in Public Works

The recent action of the Federal Public Works Administration in including in the Form of Contract for all Federal public works and in its Bulletin No. 2 General Information and Instructions for State Advisory Boards and State Engineers an article on accident prevention is a source of encouragement to all who have been interested in the national accident prevention movement. This article has been inserted in the contracts through the efforts of the National Safety Council, which has offered its services to all of the Federal Departments and in particular to the emergency organizations which are responsible for the administration of the laws affecting Federal, State, and city public works and other special operations under the Recovery program.

The Army and the Navy have during the past years conducted active accident prevention programs among their employees but this new ruling of the public works administration is the first action taken by the Federal Government in insisting that contractors who are carrying on work for the Federal Government must take steps aimed to insure that their employees shall be protected from accidental injury.

Article 27, on accident prevention, of the Form of Contract reads as follows:

> ART. 27. *Accident prevention.*—The contractor shall at all times exercise reasonable precautions for the safety of employees on the work and shall comply with all applicable provisions of Federal, State, and municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with safety codes approved by the American Standards Association, unless such codes are incompatible with Federal, State, or municipal laws or regulations. Nothing in this article shall be construed to permit the enforcement of any laws, codes, or regulations herein specified by any except the contracting officer.

The American Standards Association has to date approved 54 safety codes, most of which can be of considerable service to general contractors engaged in the development of public works. The American Standards Association will cooperate with the National Safety Council and the Public Works Administration in the application of the provisions of the safety codes.

C. A.

1933 Electrical Code Approved by ASA

The 1933 edition of the National Electrical Code (C1-1933) was approved as American Standard on September 1, 1933, as submitted by the sponsor, the National Fire Protection Association.

An article outlining the more important features of the changes in the Code, by A. R. Small, chairman of the sectional committee for the Code, will appear in an early issue.

Meeting of Committee on Plastering

A meeting of the Sectional Committee on Specifications for Plastering (A42) was held in Chicago late in June, during the A.S.T.M. meetings. F. Leo Smith, Technical Secretary of the American Institute of Architects, who was designated as chairman by the sponsors, the American Society for Testing Materials and the American Institute of Architects, presided. It was announced that a coordinating committee with Frank B. Stevens, Jr., as chairman had been organized in order to harmonize the drafts of specifications already partially developed by the committee and to block out an active program for future work. Particular attention was given in these drafts, on which work is under way, to provisions for lathing, Portland cement plastering, Keenes cement plastering, and the size of ground lime.

Woven Textile Fabrics

The American Society for Testing Materials as sponsor for General Methods of Testing Woven Textile Fabrics (L5-1931) (A.S.T.M:D39-27) has recently advised the ASA that certain revisions of the above standard are under consideration. In accordance with recommendations of A.S.T.M. Committee D-13 on Textile Materials the Society is publishing, as tentative revisions, minor changes in the crimp test and in the proposed tear-resistance test, and adding an elongation test.

Revised Rail Standards Published

The revised standards covering designs for rails and splice bars used by electric railways, approval of which was announced in the July issue, are now available at 10 cents each from the American Standards Association, or from the American Transit Association, 292 Madison Avenue, New York.